CLAIMS

1. (Previously amended) A process for producing an alkali metal comprising introducing an electrolyte into an electrolytic cell and carrying out electrolysis with said electrolyte to produce said alkali metal at the cathode and halogen at the anode of said cell wherein said electrolyte comprises or is produced by combining at least one alkali metal halide and a co-electrolyte; said co-electrolyte comprises (1) at least one halide selected from the group consisting of Group IB halide, Group IIIA halide, Group VIII halide, and combinations of two or more thereof and (2) a halide-donating compound, which is capable of reacting with a Lewis acid by donating a halogen atom.

2. (Original) A process according to claim 1 wherein said process is carried out under a condition in which a molten layer of said alkali metal is produced.

3. (Original) A process according to claim 2 wherein said process is carried out at a temperature below about 200 °C, but is higher than the melting point of said alkali metal.

4. (Original) A process according to claim 1 wherein said at least one halide is selected from the group consisting of aluminum halide, boron halide, antimony halide, iron halide, cobalt halide, nickel halide, and combinations of two or more thereof.

5. (Original) A process according to claim 1 wherein said halide-donating compound is RSO_2X, $RP(O)X_2$, or combinations thereof; R is $-CX'_3$, $-N=PX_3$, $-(CX_2)_nCX_3$, or combinations of two or more thereof; X is halogen; X' is hydrogen, halogen, or combinations thereof; and n = 3 - 7.

6. (Previously amended) A process according to claim 2 wherein said halide-donating compound is RSO_2X, $RP(O)X_2$, or combinations thereof; R is $-CX'_3$, $-N=PX_3$, $-(CX_2)_nCX_3$, or combinations of two or more thereof; X is halogen; X' is hydrogen, halogen, or combinations thereof; and n = 3 - 7.

7. (Original) A process according to claim 3 wherein said halide-donating compound is RSO_2X, $RP(O)X_2$, or combinations thereof; R is $-CX'_3$, $-N=PX_3$, $-(CX_2)_nCX_3$, or combinations of two or more thereof; X is halogen; X' is hydrogen, halogen, or combinations thereof; and n = 3 - 7.

8. (Original) A process according to claim 4 wherein said halide-donating compound is RSO_2X, $RP(O)X_2$, or combinations thereof; R is $-CX'_3$, $-N=PX_3$, $-(CX_2)_nCX_3$, or combinations of two or more thereof; X is halogen; X' is hydrogen, halogen, or combinations thereof; and n = 3 - 7.

9. (Previously amended) A process according to claim 8 wherein said halide-donating compound is selected from the group consisting of methanesulfonyl chloride, trichlorophosphazosulfonyl chloride, trichlorophosphazophosphoryl chloride, and combinations of two or more thereof.

10. (Original) A process according to claim 9 wherein said co-electrolyte comprises aluminum chloride and methanesulfonyl chloride.

11. (Original) A process according to claim 9 wherein said co-electrolyte comprises aluminum chloride and trichlorophosphazosulfonyl chloride.

12. (Original) A process according to claim 9 wherein said co-electrolyte comprises aluminum chloride and trichlorophosphazophosphoryl chloride.

13. (Previously amended) A process for producing an alkali metal comprising introducing an electrolyte into an electrolytic cell and carrying out an electrolysis with said electrolyte, which comprises at least one alkali metal halide and a co-electrolyte wherein said co-electrolyte comprises (a) at least one halide selected from the group consisting of Group IB halide, Group IIIA halide, and Group VIII halide and (b) a halide-donating compound wherein

said process is carried out under a temperature below about 200°C;

said process is carried out such that a molten layer of said alkali metal is produced at the cathode and halogen is produced at the anode of said cell;

said at least one halide is selected from the group consisting of aluminum halide, boron halide, antimony halide, iron halide, cobalt halide, nickel halide, and combinations of two or more thereof; and

said halide-donating compound is RSO_2X, $RP(O)X_2$, or combinations thereof; R is $-CX'_3$, $-N=PX_3$, $-(CX_2)_nCX_3$, or combinations of two or more thereof; X is halogen; X' is hydrogen, halogen, or combinations thereof; and n = 3 - 7.

14. (Original) A process according to claim 13 comprising raising said temperature to higher than the melting point of said alkali metal if said temperature is below the melting point of said alkali metal.

15. (Original) A process according to claim 14 wherein X or X' is chlorine.

16. (Previously amended) A process according to claim 15 wherein said halide-donating compound is selected from the group consisting of methanesulfonyl chloride, trichlorophosphazosulfonyl chloride, trichlorophosphazophosphoryl chloride, and combinations of two or more thereof.

17. (Original) A process according to claim 15 wherein said co-electrolyte comprises aluminum chloride and methanesulfonyl chloride.

18. (Original) A process according to claim 15 wherein said co-electrolyte comprises aluminum chloride and trichlorophosphazosulfonyl chloride.

19. (Original) A process according to claim 15 wherein said co-electrolyte comprises aluminum chloride and trichlorophosphazophosphoryl chloride.

20. (Original) A process according to claim 17 wherein said alkali metal is sodium and said alkali metal halide is sodium chloride.

21. (Original) A process according to claim 18 wherein said alkali metal is sodium and said alkali metal halide is sodium chloride.

22. (Original) A process according to claim 19 wherein said alkali metal is sodium and said alkali metal halide is sodium chloride.

23. (Previously amended) A process for producing sodium comprising electrolyzing, in an electrolytic cell, an electrolyte comprising (1) sodium chloride and (2) a co-electrolyte selected from the group consisting of (a) aluminum chloride and methanesulfonyl chloride, (b) aluminum chloride and trichlorophosphazosulfonyl chloride, (c) aluminum chloride and trichlorophosphazophosphoryl chloride, and (d) combinations of any two of (a), (b), and (c) wherein said process is carried out under a temperature below about 200°C to produce sodium at the cathode and chloride at the anode of said cell.

24. (Previously amended) A process according to claim 23 wherein said process is carried out under a condition such that a layer of molten sodium is produced.

25. (Previously amended) A process according to claim 24 comprising raising said temperature to higher than the melting point of sodium if said temperature is below the melting point of sodium.

26. (Original) A process according to claim 25 further comprising removing said layer of molten sodium from said cell.

27. (Previously amended) A process according to claim 26 further comprising separating said sodium thereby optionally producing a recovered electrolyte.

28. (Original) A process according to claim 27 further comprising recycling said recovered electrolyte.

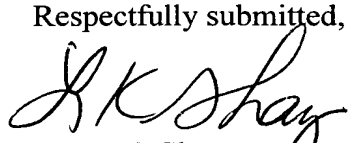
29. (Previously amended) A process according to claim 28 wherein said recovered electrolyte comprises said sodium chloride, said aluminum chloride, and said methanesulfonyl chloride.

30. (Previously amended) A process according to claim 28 wherein said recovered electrolyte comprises said sodium chloride, said aluminum chloride, and said trichlorophosphazosulfonyl chloride.

31. (Previously amended) A process according to claim 28 wherein said recovered electrolyte comprises said sodium chloride, aluminum chloride, and said trichlorophosphazophosphoryl chloride.

32. (Currently amended) A process according to claim 1 comprising raising ~~said~~ the temperature of said cell to higher than the melting point of said alkali metal if said temperature is below the melting point of said alkali metal.

Respectfully submitted,



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